

CLAIMS

1. A slider assembly for a data storage device, the assembly comprising a slider main body; a piezoelectric element mounted on the slider main body; and a head mounted on the piezoelectric element; wherein the slider main body can be moved and the piezoelectric element can be operated to adjust the position of the head with respect to a data storage medium.

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2. A slider assembly according to Claim 1, wherein the piezoelectric element is operable to move the head in a direction generally parallel to a data bearing surface of the data storage medium.

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3. A slider assembly according to any preceding claim, wherein the piezoelectric element is mounted on a trailing end of the slider main body.

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4. A slider assembly according to any preceding claim, wherein the piezoelectric element is connected at one end to the slider main body, the remainder of the element being suspended from the slider main body.

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5. A slider assembly according to Claim 4, wherein the head is mounted towards the end of the element furthest from said one end connected to said slider main body.

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6. A slider assembly according to Claim 4, wherein the slider main body is provided with a mounting pad, said one end of said piezoelectric element being provided with a projection affixable to said mounting pad.

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7. A slider assembly according to Claim 6, wherein the mounting pad is formed integrally with said slider main body.

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8. A slider assembly according to Claim 6, wherein the mounting pad is formed separately from said slider main body and subsequently affixed

thereto.

9. A slider assembly according to any preceding claim, wherein the piezoelectric element is generally "S" shaped.

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10. A slider assembly according to any of claims 1 to 8, wherein the piezoelectric element is generally "C" shaped.

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11. A slider assembly according to any of claims 1 to 8, wherein the piezoelectric element is generally spiral.

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12. A slider assembly according to any preceding claim, wherein the slider main body is provided with a notch, said element being located within said notch.

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13. A slider assembly according to Claim 12, wherein the element is at least partly recessed within said notch.

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14. A slider assembly according to Claim 12 or 13, wherein the slider main body surrounding the notch extends beyond the element in a direction generally parallel to a data bearing surface of the data storage medium and in a direction generally perpendicular to the data bearing surface of the data storage medium.

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15. A slider assembly according to any preceding claim, wherein the head is a read/write head operable to read data from the data storage medium and write data to the data storage medium, said head comprising a read/write transducer.

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16. A slider assembly according to any of claims 1 to 14, wherein the head is a read/write head operable to read data from the data storage medium and

write data to the data storage medium, said head comprising a read transducer and a write transducer.

17. A slider assembly according to any preceding claim, wherein the
5 element comprises integrated interconnects for carrying signals to and/or from
the head as required.

18. A slider assembly according to any of Claims 1 to 14, wherein the
10 head comprises either a read head operable to read data from the data storage
medium or a write head operable to write data to the data storage medium,

19. An actuator for a data storage device, the actuator comprising:
a slider assembly according to any preceding claim;
an arm connected at one end to the slider assembly; and
15 a motor operable to rotate the arm about a pivot point to move the
slider assembly back and forth over a data storage medium;
wherein the motor is operable to adjust the position of the head with
respect to the data storage medium by rotating the arm, and the piezoelectric
element of the slider assembly is operable to adjust the position of the head
20 with respect to the data storage medium.

20. An actuator according to Claim 19, wherein the motor and the element
are operable independently of one another to vary the position of the head
with respect to the data storage medium.

25 21. An actuator according to Claim 19 or 20, wherein the motor comprises
a voice coil motor.

22. An actuator according to any of claims 19 to 21, wherein the servo
30 bandwidth of the actuator is greater than 1.5 kHz.

23. An actuator according to any of claims 19 to 22, wherein the servo bandwidth of the actuator is greater than or equal to 5 kHz.

24. An actuator according to any of claims 19 to 23 where the arm is connected to the slider assembly by way of a flexure which functions to reduce shock and/or vibration transmission through the arm to the head and vice versa.

25. A hard disk data storage device comprising:
a platter carrying a magnetic data storage medium;
an actuator according to any of claims 19 to 23 when dependent upon any of claims 1 to 17;
a first control circuit operable to control the motor;
a second control circuit operable to control the piezoelectric element;
and
an input/output interface for input of signals to and output of signals from the hard disk data storage device.

26. A computer system comprising at least one hard disk data storage device according to claim 25.

27. A method of manufacturing a slider assembly, the method comprising the steps of: forming a slider main body and a piezoelectric element; attaching the element to the slider main body; and forming a head on the element.

28. A method of manufacturing a slider assembly, the method comprising the steps of: forming a slider main body, a piezoelectric element and a head; attaching the element to the slider main body, and attaching the head to the element.

29. A method according to Claim 27 or 28, comprising the further step of

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forming interconnects on said element to carry signals to and/or from said head.

30. A slider assembly comprising:

5 a slider main body having a trailing end and a leading end, a notch being formed in said trailing end;

10 a piezoelectric element having a first end and a second end and being formed so as to be generally "S" shaped or generally "C" shaped or generally spiral, said piezoelectric element being connected proximate said first end to a mounting pad provided on the slider main body so that the remainder of said element is freely suspended from said slider main body; and

a head mounted proximate said second end of said piezoelectric element;

wherein the piezoelectric element is mounted on the slider main body
15 so as to be wholly recessed within the notch.